



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,315	06/27/2007	Lawrence C. Kennedy	032968-0134	2098
22428	7590	02/07/2011	EXAMINER	
FOLEY AND LARDNER LLP			DODD, RYAN P	
SUITE 500			ART UNIT	PAPER NUMBER
3000 K STREET NW			3655	
WASHINGTON, DC 20007				
			MAIL DATE	DELIVERY MODE
			02/07/2011	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/594,315	KENNEDY ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	RYAN DODD	3655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 22 November 2010.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-9,49-54,62-65 and 72 is/are pending in the application.  
 4a) Of the above claim(s) 62-65 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-9,49-54 and 72 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 27 September 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

This action is in response to the amendment received 22 November 2010.

Amendments to the Claims, along with Remarks have been received, entered, and are being considered by Examiner. Claim 72 has been added. Claims 1-9, 49-54, 62-65, and 72 are currently pending, with claims 62-65 being withdrawn from consideration.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation "W-W shaped profile" of claim 51 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claim 51 and 72** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 51 recites the limitation: "wherein the grooved portion of the rotor further has a W-W shaped profile." This limitation is uncertain because Examiner is not sure what a W-W shaped profile would look like. For instance, would the two W's be side by side? The only place where it is mentioned in Applicant's specification, paragraph 54, does not distinguish what such a profile might look like.

Claim 72 recites the limitation "wherein the rotor includes an outer radial surface and an inner radial surface, with each of the outer radial surface and the inner radial surface including grooved portions forming a W-shaped profile." This limitation is indefinite because it is uncertain whether the outer and inner radial surfaces include grooved portions that overall form a W-shaped profile or whether there is more than one

W-shaped profile. Applicant's specification does not support the latter interpretation.

Perhaps claim 72 should read: "*the* W-shaped profile". Then it would be certain that there is only one W formed in profile.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

**Claims 1-2, 4-5, 6, 49-52, 54, and 72** are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Maji 5178582 (henceforth Maji '582).

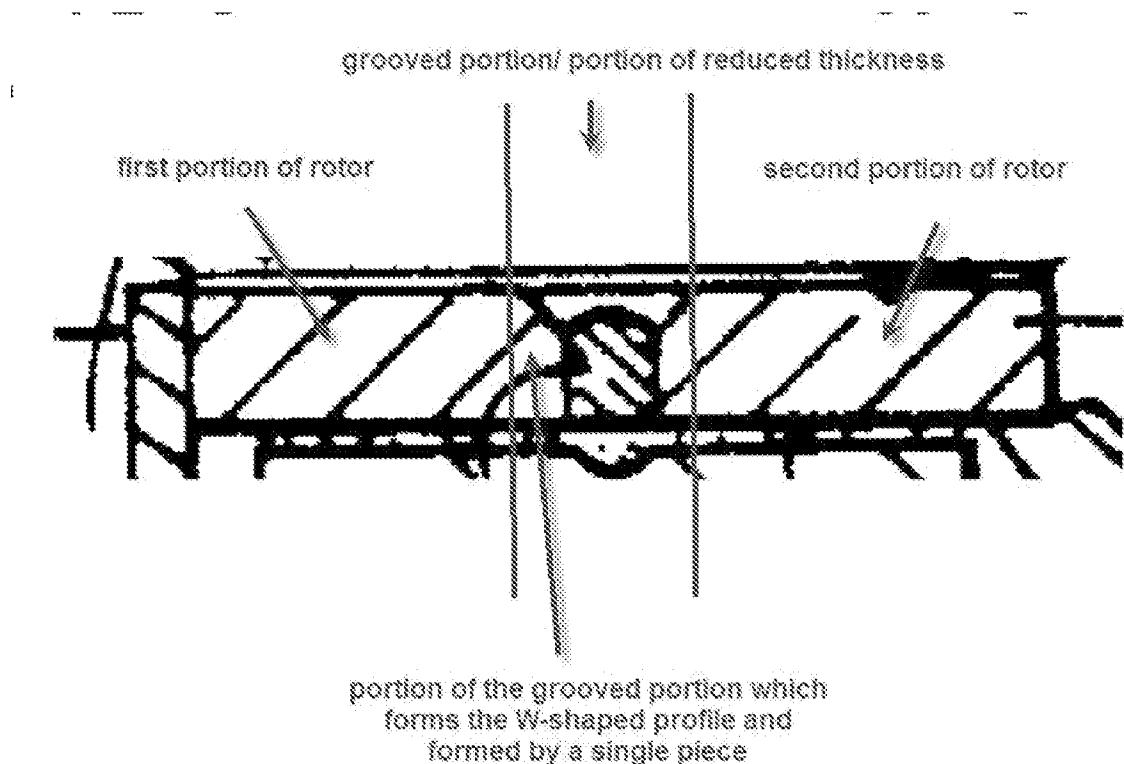
Maji '582 discloses, referring to Fig. 5 a viscous fluid clutch for use in a vehicle comprising:

- a rotor (cylinder 5, is rotated, see column 1, line 24) having a rotor hub (side plate 7) driven by an input shaft (4) and a rotor surface having an end connected to an outer periphery of the rotor hub,
- the rotor surface including: a first portion; a second portion; and a grooved portion disposed between the first and second portions;
- wherein the grooved portion forms a W-shaped profile, wherein a portion of the grooved portion which forms the W-shaped profile is formed by a single piece (see Fig. 5 and figure below);

- wherein the first and second portions of the rotor each have a thickness sufficiently greater than a thickness of the grooved portion such that a magnetic flux path in the fluid clutch will have a substantial portion of a magnetic field flow around the grooved portion as compared to a portion of the magnetic field flow that flows through the grooved portion.

Because Maji '582 contains the same basic structure of the present application, and in addition to the first and second portions having a thickness greater than a thickness of the grooved portion, it is reasonable to assume that a magnetic field would be affected in the same manner by the clutch of Maji '582.

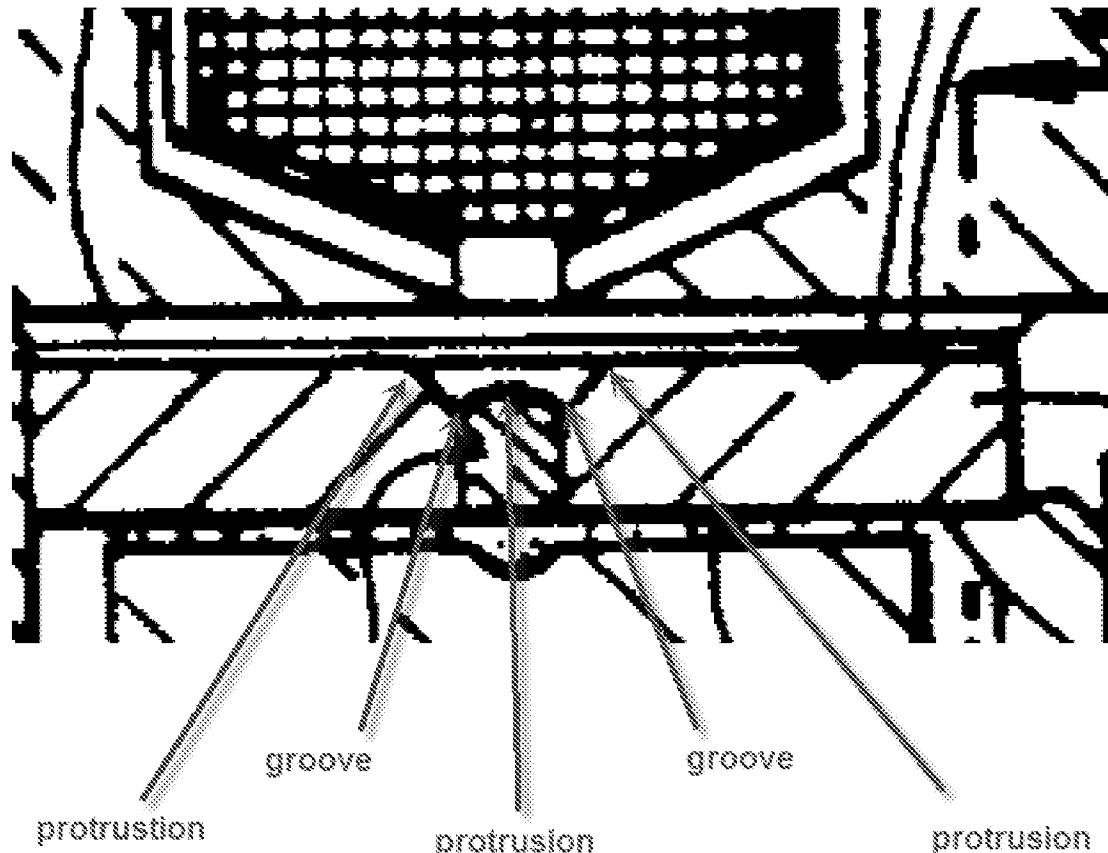
Although Maji '582 discloses that its working fluid is a powder, powder is viscous and fits the definition common definition of fluid because it may flow. In addition the clutch of Maji '582 is fully capable of being used somewhere in a vehicle.



**As to claims 2, and 4-5,** Maji '582 discloses a magnetorheological fluid clutch, comprising:

- an input shaft (4);
- a coil assembly (8) for generating a magnetic field;
- a housing comprising a stator (rotor 20); and
- a rotor (cylinder 5, is rotated, see column 1, line 24) disposed in the housing; wherein the rotor includes a radially extending hub (7) driven by the input shaft and an annular rotor ring connected to the hub; and
- wherein the rotor ring includes a first portion, a second portion, and a portion of reduced thickness (see Fig. 5 and figure above) disposed between the first and second portions to prevent a shunt in the magnetic field, and

- wherein the portion of reduced thickness is formed to include grooves and protrusions (see figure below).



**As to claim 6**, in accordance to MPEP 2113, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. Please note that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product, i.e. the portion of reduced thickness, does not depend on its method of production, i.e. formed without cutting. *In re Thorpe, 227 USPQ 964, 966 (Federal Circuit 1985).*

As to **claims 49 and 54**, Maji '582 discloses the fluid clutch and its elements but does not disclose a "roll-formed portion". However, in accordance to MPEP 2113, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. Please note that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product, i.e. the portion of reduced thickness, does not depend on its method of production, i.e. formed without cutting. *In re Thorpe, 227 USPQ 964, 966 (Federal Circuit 1985)*.

As to **claims 50 and 52**, Maji '582 discloses the claimed elements (see above analysis), as well as a thinned portion and a saw tooth shaped profile (albeit a blunted sawtooth).

As to **claim 51**, Maji '582 discloses a W-W shaped profile because it shows a "W" on the bottom half of the profile (cross section view Fig. 1) and an "W" on the top half of the profile.

As to **claim 72**, it appears element 5' is formed of a different material and placed in a groove that extends from the outer radial surface of the rotor to the inner radial surface of the rotor. Therefore it can be said that both surfaces have grooved portions.

**Claim 49** is alternatively rejected under 35 U.S.C. 102(b) as being anticipated by cited art of record US Patent Moser et al. 6102177 (henceforth Moser '177). Moser '177 discloses the fluid clutch of claim 49 but does not disclose that its portion is "roll formed". However, in accordance to MPEP 2113, the method of forming the device is

not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. Please note that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product, i.e. the portion of reduced thickness, does not depend on its method of production, i.e. formed without cutting. *In re Thorpe, 227 USPQ 964, 966 (Federal Circuit 1985).*

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3, 7-8 and 53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Maji '582 alone.

As to claims 3 and 53, Maji '582 discloses the magnetorheological fluid clutch of claim 2 but **does not disclose** wherein the thickness of the first portion and the thickness of the second portion are at least seven times greater than the thickness of the portion of reduced thickness. However, It would have been obvious to one having ordinary skill in the art at the time the invention was made to reduce the thickness of the portion of reduced thickness to a very small amount, since it has been held that where

the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As to **Claims 7-8**, Maji '582 discloses the magnetorheological fluid clutch of claim 2, but does not specify what type of metal its rotor ring is comprised of. However, it would have been obvious to one having ordinary skill in the art to form the rotor ring of either a ferrous or non-ferrous material. One skilled in the art would recognize the effects of using ferrous metals so close to a magnet on the rotating device. Thus, choosing the type of metal with which to form would be merely a matter of choice of design.

**Claims 1-9, 49-54** are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Moser '177 or cited art of record Smith et. al. 6585092 (henceforth Smith '092), in view of Maji '582.

Moser '177 discloses a fluid clutch and **fan drive assembly** very similar to that of the present application. Its portion of reduced thickness is very thin, but is not formed in the shape of a "W". Likewise, Smith '092 discloses a fluid clutch very similar to that of the present application. Its portion of reduced thickness looks to be a recess, but is not formed in the shape of a "W". However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reduce the thickness of a portion of the rotor, as is known from Moser '177 or Smith '092, and form it in the shape of a "W", as is known from Maji '582, in order to solve the same problem addressed in Smith '092 and Moser '177 by "shunting" a magnetic field.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-9, 49-54, 62-65, and 72 have been considered but are moot in view of the new ground(s) of rejection. In particular, Applicant argues in Maji '582, cylinder 5 and ring 5' do not form a W shaped profile with only a single piece. Respectfully, while Examiner may agree that these elements are discrete pieces, it is noted that claim 1 only requires that "*a portion* of the grooved portion which forms the W-shaped profile is formed by a single piece (See above rejections).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN DODD whose telephone number is (571)270-1161. The examiner can normally be reached on Monday thru Friday, 9:00A-6:30P, with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Le can be reached on (571)272-7092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David D. Le/  
Supervisory Patent Examiner, Art Unit 3655  
02/03/2011

/Ryan Dodd/

Application/Control Number: 10/594,315  
Art Unit: 3655

Page 13